

USDA-NRCS
Booneville Plant Materials Center

Indiangrass Observation Rating
2007 Report of Progress

Indiangrass a perennial warm-season grass grown for decades on marginal lands is not well suited for conventional row crop production. It is being recognized as a potential renewable energy source, a grass species for wildlife habitat, and water quality. Preliminary studies and plant surveys indicate that Indiangrass is adapted for this region of the U.S. Also recognized is the fact that Indiangrass is not as drought tolerant as other warm-season grass species which results in decreased dry-matter production.



Indiangrass planted into cones to be planted in plots at a later date

Indiangrass that is more drought tolerant and that has increased dry-matter production and may one day contribute to reducing our dependence on foreign oil and ease the energy crisis. Since Indiangrass is a renewable resource which is produced on America farms it has great relevance to current economic and environmental issues. Indiangrass is also used for wildlife habitat improvement; livestock forage, and buffer systems to improve water quality.

Development of a substantially improved Indiangrass cultivar to use as a perennial crop for livestock consumption, wildlife enhancement, to use as a buffer crop to trap nutrients, and possibly as a biofuel product could benefit our agricultural economy by providing an important new source of income for farmers. Biofuel production from perennial cropping systems would help reduce loss of agricultural soils, reduce our dependence on imported oil supplies, and lower greenhouse gas emissions and other toxic material in the atmosphere.

The Booneville Plant Materials Center (PMC) has initiated a study to examine the possibility of developing a new Indiangrass cultivar. In the fall of 2006, numerous collections of seed of Indiangrass were collected from western Arkansas, eastern Oklahoma, and southern Missouri. Each group of seed was assigned an accession number. In November and December of 2006 the seed was planted in cones and maintained in the greenhouse for five to six months. The vegetative material was then transferred to the field for planting. The Indiangrass plant material was established by planting five plant subplots. This arrangement was replicated three times. The middle three plants will be used for evaluation. The visual ratings for the study consisted of disease resistance, insect resistance, drought tolerance, basal diameter, height, leaf width, leafiness, and bloom date. A rating for the three middle plants was based on a numerical value from one to ten, ten being



Randy King, Plant Materials Manager in Booneville walks through a plot of newly planted Indiangrass

the highest. Visual ratings for the three replications were then averaged for a final numerical value. These values are presented the table at the end of this report.

The study was irrigated after establishment to insure plant growth and limit plant mortality. After July, no other irrigation was applied to the study. Fertility (250 lbs/ac of 13-13-13) will be applied during the 2008 growing season.

All accessions in the study exhibited negligible or no evidence of insect infestation or feeding. The leaves of Indiangrass accessions were found to be infected with rust. This rust was more predominate in some accessions than in others. Accessions with a rating of 7 or 8 would be considered more disease resistant than accessions with lower ratings. Drought tolerance is an important characteristic that will determine if the accession is selected for further evaluation. Visual ratings above 5 are important in this characteristic. Approximately 10 accessions were rated 5.3 and above. Basal diameter, plant height, leaf width, and leafiness are all characteristics which are used to determine dry-matter production. Values of 5.7 and above are important in basal diameter selection. Visual ratings of 5.3 or higher are important for height and leaf width. Ten accessions had ratings of 5.7 or higher for leafiness. The average bloom date was 4 September. Some entries bloomed as late as 20 September.



A plot of established Indiangrass

Observation Ratings for Indiangrass Accessions, Sep, '07

Number	Dis Rest	Ins Res	Dgt Tol	Basal Dtn	Hgt	Leaf Wh	Leafiness	Blm Dt
Americas	6	9	6	6	5.3	6.7	6.3	18-Sep
Cheyenne	7	9	5.7	5.3	5	4.7	5.3	4-Sep
761	8	9	6.3	6.3	6.3	5.7	6.3	4-Sep
762	5	9	5	4.3	4.7	4.7	4.7	18-Sep
763	8	9	6.7	6	6.7	5.3	6	19-Sep
764	6	9	5.7	6	5.7	5.7	5.7	4-Sep
765	6	9	3.7	5.3	5	4.7	5.7	3-Sep
766	4	9	6.3	5.7	5.7	5	5.7	4-Sep
767	5	9	4	4	4	4	4	2-Sep
768	6	9	5.7	6	6	5.3	5.7	4-Sep
769	4	9	4.7	4	4.7	5.3	4	19-Sep
770	7	9	4.7	4.3	4	4	4.3	20-Sep
771	6	9	3	4	4	2.3	2.3	19-Sep
776	4	9	4.3	4	4	4	4	19-Sep
777	4	9	5	4.3	4	4.3	4.3	4-Sep
778	5	9	4	4	4	4	4	4-Sep
779	4	9	3.3	3.7	3.7	3.3	3.7	5-Sep
780	4	9	4	4	4	4	4	6-Sep
781	5	9	5.7	5	4.7	5	6.3	6-Sep
783	5	9	4	4	4	4	4	4-Sep
785	5	9	5	5	4.7	5	5	4-Sep
790	4	9	4.3	4.3	4.3	5	4.7	4-Sep
791	6	9	4.7	5	4	4	4	4-Sep
793	5	9	4.7	4	4	4	4.3	5-Sep
796	6	9	5	5	5	6	5	4-Sep
797	5	9	5	5.7	5	5.3	5.7	4-Sep
802	4	9	4.3	4.3	4	4	3.7	3-Sep
803	5	9	4	3.7	3.7	4	4	4-Sep
807	6	9	5	6	5	5.3	6.3	4-Sep
809	4	9	4.7	4.3	4.3	4	4.3	5-Sep
810	8	9	5.3	5.7	5.7	5.7	6	5-Sep
811	5	9	5	3	3	4	4	4-Sep
812	8	9	4.7	5	4.7	5	5	6-Sep
813	4	9	3	3	3	3	3	3-Sep
815	5	9	5	5.3	5	5	5.7	5-Sep
816	4	9	4.7	4	4.3	4.3	4	4-Sep
817	8	9	6	5.7	5	4.7	5.7	10-Sep
820	3	9	3	3	3	3	3	2-Sep
827	5	9	4	4	4	4	4	3-Sep
829	4	9	4	4	4	4	4	5-Sep
831	5	9	5	4	4	4	4	5-Sep
832	5	9	6	6	6	6	6	4-Sep
835	8	9	5.7	5.3	5.3	5.7	5.3	4-Sep
836	4	9	4	3.3	3.7	3.7	3.7	5-Sep
837	4	9	4.7	3.7	3.7	3.7	3.7	7-Sep
838	5	9	5	5	5	4	4	4-Sep
840	5	9	4	4	4	4	4	2-Sep

